

critical raw materials. But we can ensure our survival as a free nation, General Spaatz believes, if we adhere to the four rules of security illustrated above.

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Thus the Kremlin strategists would draw space around Russia like a shawl. The flash attack upon the U.S. must be understood as essentially a preventive measure aimed at impeding the development of an American counteroffensive. Thereafter the Soviet ground forces would be the principal instrument. It is taken for granted that the Russian leaders would immediately order the Soviet Army to push westward in Europe—to attempt to add Western Europe's industrial skills and capacity to their own. At the same time they would move to cut us off from vital raw materials in the Middle East, China and elsewhere.

The facts of economic warfare

In the last war Japan's capture of the rubber and tin of Malaya and the Dutch East Indies brought home to Americans the hard facts of economic warfare. Now, as we add up the cost to the 1.S. of being an arsenal of democracy in a global war, we discover that our natural wealth is greatly depleted. War gouged deep into our iron-ore reserves. The crude oil of the Western Hemisphere, hich helped fuel two world wars, might soon be insufficient to neet our own demands.

India's manganese, China's antimony and the Middle East's oil to under the Russian shadow. If critical raw materials such as these, closer to Russia than to us, should pass under Soviet control, a significant, perhaps disastrous, slowing down of the U.S. industrial machine would inevitably follow. The Russians might then with confidence revert to the classic strategy of attrition that defeated Napoleon and Hitler—retreat, counterattack and return. A war of attrition against Russia, with her vast spaces and man-

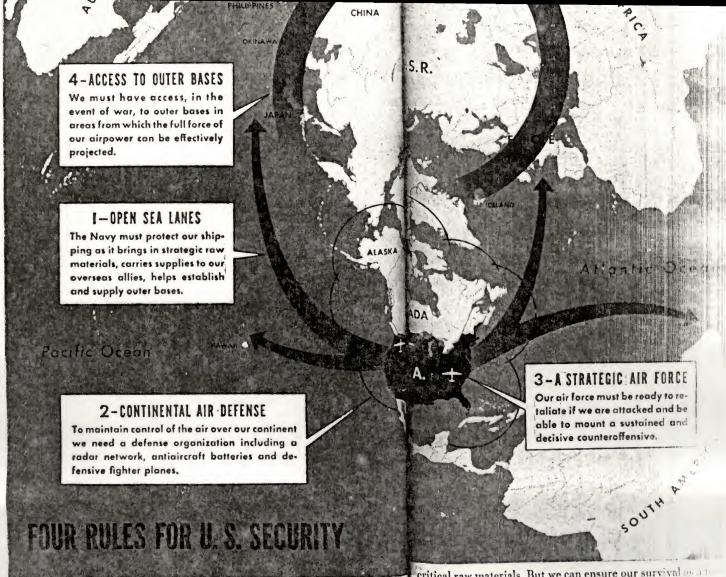


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IN PHASE II, when we no longer have a monopoly on atomic weapons, we will be open to flash attacks at home as well as in danger of being cut off from

AIR WARFARE CONTINUED

the weapons from our hands by the use of a flash blow. The result would hamper, and might even temporarily paralyze, our ability to counterattack in sustained force.

The picture is forbidding enough, but I agree with those who maintain that such an attack would not be decisive. The U.S. industrial capacity is too big to be permanently destroyed by a single attack. To exploit the advantage of an initial air strike an enemy would have to follow up with a determined effort to obtain supremacy in the air over the U.S., which must be the goal of strategic air warfare for any nation which hopes to conquer us. This, in my opinion, will be beyond Soviet capabilities for some time to come.

Nevertheless a flash blow, even if only moderately successful, would handicap us in the gigantic tasks of supporting overseas allies, setting up new outlying bases and maintaining old ones. More important, the Russians could move their ground forces without much interference from us; they could expand their buffer space and seize those areas we ourselves would need for forward bases for our airpower.

In the past the Russians used their vast space to weaken invading armies; their strategy was to retreat and lure the enemy to destruction at the end of overextended supply lines. In the Air Age they can employ the concept of space as a weapon against superior airpower by bringing under their control those areas on the Soviet perimeter that could provide convenient bases for a strategic air offensive against them. At the start of a war an opponent would then be compelled to operate his air force at long ranges, with much-diminished bomb loads and with limited fighter protection.

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SOVIET PARATROOPS staged this mass drop near Moscow to celebrate Aviation Day last July. In World War II Russian paratroops were used in attacks on the Kuriles, Romanian oil fields and in the last stage of the battle for Berlin.

AIR WARFARE CONTINUED

power reserves, would impose backbreaking demands on us. The time might come when the American high command would be obliged to ask the President the same question that Luftwaffe General Milch, before a map of Russia, asked Hitler when the Führer was wildly conjuring up a new offensive to offset the debacle of Stalingrad. "Where, my Führer," asked Milch, "are you going to get the masses to fill these spaces?"

What I have outlined above is what the Russian strategists might hope to achieve if war breaks out. Now let us see what, in the light of the foregoing, the U.S. should seek to do in Phase II. The hard facts of airpower, I am convinced, impose these four rules upon us for security:

1. The sea lanes must be kept open.

2. Control of the air over the North American continent must be held by ourselves and friendly nations.

3. There must be in existence, in a state of constant readiness, a strategic air force powerful enough to deal a critical, if not a mortal blow in immediate retaliation to an aggressor.

4. We must have access to outer bases from which to project

our airpower in the decisive struggle for air supremacy.

The importance of keeping the sea lanes open hardly requires further discussion, although the size and composition of the forces required to accomplish the Navy's time-honored major function may well be subjected to critical analysis.

The Navy-Air Force argument

HERE we come to the crux of the airman's difference with the Navy. When airplanes could not cross the ocean spaces with an effective bomb load, the Navy, naturally but illogically, came to think of the ocean air spaces as its own special province. Indeed only 10 years ago the only long-range bomber force on the Atlantic coast—part of the Army Air Corps—was forbidden to operate, even for training purposes, more than 100 miles offshore.

The instant the land-based bomber was able to cross the oceans any justification for making the shore line the dividing line between Air Force and Navy jurisdiction over airpower should have disappeared. What happened instead becomes apparent when one looks at the current naval attitude on airpower. From opposing the long-range bomber, on the ground that it was strategically unimportant, the Navy is now feverishly engaged in developing its own ocean-based counterpart. In fact the new 65,000-ton carrier, far from being designed for the traditional Navy role of control of the seas, appears to be merely a highly vulnerable ocean platform for the launching of a few bombers against enemy industrial centers.

Airpower has thus made its final convert. The long-standing conflict between the Navy and the airmen, which began as a debate between airpower and seapower, has devolved into a jurisdictional dispute within the department of defense over splitting up the nation's total airpower. In effect the Navy is attempting to create a second air force.

The idiosyncrasies of military accounting make it impossible to obtain more than a rough estimate of the total cost of U.S. airpower. If this year's appropriations for the Air Force are added to what the Navy will probably spend on aviation, the figure is on the order of \$8 billion, or more than half of the national defense budget.

When so much remains to be done to provide a truly balanced



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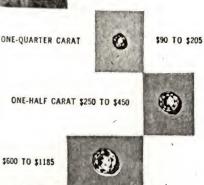
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Mrs. William Budge, the former Miss Willa McNear of San Francisco, painted by Eznar Hansen.





N. W. AYER A BON



REFUELING IN MID-AIR, demonstrated above by British planes, greatly extends range of bombers, also permits safer take-offs with lighter fuel loads.

AIR WARFARE CONTINUED

military structure around the core of one air force, can the country afford two? This is perhaps the most vital question which must be answered if the American people are to have maximum defense for

the money spent.

The penalty of duplication does not stop at the dollar cost nor the cost to our diminishing natural resources. In a period when events demand a dynamically progressive unification of the armed forces, competition between the two services makes for a debilitating divergence of effort. If we should one day be rushed by an enemy who had farsightedly put his airpower under centralized direction, this disunity might well bring us to military disasters that would make Pearl Harbor seem insignificant.

The seeds of the trouble lie partly in the professional military man's education. Since their founding, the military services of the U.S. have cherished their separate traditions and have operated with respect to each other in that spirit of competitive rivalry which is inherent in the American character. But in our military establishment the cold disciplines of science and technology today demand a corporate detachment and an imperviousness to any

sentiment except devotion to the national interest.

If we cannot bring ourselves to resolve the conflict and achieve true unification, then Phase II warfare might put a period to the argument—the period of catastrophe.

What we need for defense

THE second rule of security—that control of the air over our continent must be held by ourselves and by friendly powers -is valid even though one accepts the proposition that we cannot entirely ward off an air attack. A good defense organization could minimize the effectiveness of a raid and to this extent help determine the course of war.

The defense forces we need will total well over 1,000 fighter planes, requiring many thousands of men in crews and service units. Their effectiveness in turn will depend upon a radar network of continental scope. Such a network system, comprising several hundred stations, is now in preparation. When coupled with Canada's radar network it will provide a warning system extending in depth from the Arctic approaches to the oil fields of Texas.

Yet this is only the beginning of the measures to be taken for defense. We must remember that Germany, at the height of the Allied air offensive, was forced to employ something like one million men and women in ground defenses of one kind or another ranging from antiaircraft batteries to panic prevention groups.

The third rule of security-maintenance of a counteroffensive force-means that our air fleet must be kept modernized and at full strength.

I have already stated my opinion that such caution as Russian policy may have revealed in Europe arises primarily from the Soviet fear of the combined air strength of the Western nations. Airpower alone makes our present position in Berlin at all tenable.



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"Tired hust e d the minute a con Jay Corn Plant sure pain is stopp sive with Blue Ja gentle medicat. you just lift it sizes-Standard Get Blue-Jay to



capable of meeting the demands of battle. The fourth rule of security, concerning outlying air bases, brings to the key problem of air strategy: the problem of range. Air strategy begins with airplane ranges. Airplane ranges deterine the location of bases. The proximity to the target of the bases nder one's control fixes the weight and rhythm of the attack. When the strategic air war was initiated in Europe the limits action were fixed by the B-17's 750-mile radius of attack-not 10 ugh to bring all the principal targets of Central Europe within ach until the Foggia airfields in Italy had been added to those in ritain. By the end of the Pacific war the radius of our bombers had en doubled, allowing the airmen to carry the war against Japan om the Marianas, 1,500 miles away. The radius of the postwar 29 is more than 2,000 miles, and we may expect that bomber need and range will continue to increase rapidly.

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But even with substantial gains in reach, American strategic airower, unless it is to operate at only a part of its potential strength, ill continue to need access to outer bases. For this reason Western prope, North Africa and the Middle East are now the most sigficant strategic areas on the American airman's globe. The destion of our access to these regions may someday become a

fe-or-death question.

The struggle for control of the air

T present we could send an effective retaliatory strike against Russia from our own hemisphere if we refueled the combataded bombers in the air from tanker planes, thus enabling them return to their home bases after hitting their targets or continue n to other areas under friendly control. But we must still count on oving our airpower into forward-base areas for the decisive acon. Only from forward air bases could the mass of American air rength, including fighters, gain control of the enemy air space. nd not until we have won this control could we be absolutely sure the outcome of a war. Once such air supremacy is ours, however, ictory would be assured, for no nation can long survive the free

sploitation of its air spaces by an enemy.

Airpower alone could not seize the bases necessary to the developent of the decisive attacks-airpower alone could not hold them. ply ground and sea forces, in combination with air forces, could cure, hold and support the bases we would need. Therefore at least long as Phase II lasts, ground and sea forces remain indispensable pporting instruments in the struggle for mastery of the air. In the current period of cold war, air bases have the same stragic significance that naval bases had in the last century. British omination of the seas in the age of steam derived its flexibility om the chain of bases and coaling stations linked together across he seven seas. Clearly if the U.S. in this era of international fricon is to be able to bring into play its potential airpower, it must onstruct a similar global framework of bases. The American citien will certainly not sanction a base-collecting program in the pirit of 19th Century imperialism. Yet world peace, no less than ur own security, demands that American diplomacy find without clay some formula acceptable to the world community which will llow American airpower access to essential base areas. Some may ebel at the thought for it is certain to put to a severe test our caacity for statesmanship, our patience and our powers of persuaion. But for those who dread the consequences of our further inolvement in the outer world, history offers a comforting preceent. In modern times the most prolonged era of general peace mincided with the development of a dominant seapower using a world system of bases.

Since airpower is continuously in evolution, responding instanty to the advances of many sciences, great flexibility is possible ithin the framework of any plan for bases. So simple a mechanial development as the substitution of a caterpillar-track landing gear for the conventional wheel landing gear promises to revolujonize the whole concept of strategic air geography. Today straegic airpower rests upon hard-surface runways. But the cater-

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CATERPILLAR-TRACK LANDING GEAR permits take-offs and lings on unprepared surfaces, does away with need for hard runways. This has been tested successfully on a troop carrier (above) and on a light born

AIR WARFARE CONTINUED

pillar gear may free the bomber from its dependence upon selaborately prepared surfaces. Medium-weight airplanes that so equipped have already operated from soft turf and farmlar

There is another point to be made about the nature of Phas air war. Our primary targets in Russia would of course be to major industrial centers, just as the Russians would first seek paralyze our industrial centers. The very nature of the Russ industrial system, developed entirely under state planning with the contingency of war uppermost in the minds of the phase, would help us considerably. The Five-Year Plans have by placing much of the new heavy industries behind the Urals map in Life last week]. Here, it was thought by the Soviet phases, the old factor of space would shield them from attack.

But space is no longer an effective shield. Now an attacker we not have to plod laboriously and bloodily along the Minsk-Splensk-Moscow road to strike at the Russian vitals. The air offer direct, operationally feasible route for a determined attacker knock out the industries that it has cost the Russians so much create.

No one has become more acutely conscious of this than the Resian strategists. Iron and steel plants for example, which were on concentrated in a few major producing areas, have now been we dispersed. But the demands of the past war and of subseque peacetime economic pressures have brought about an increasing gree of concentration in the Russian machine-tool industry and a certain extent in the auto industry as well—a concentration whithe Russians themselves lament. It is possible that other industry facilities, of equal or perhaps greater significance as air target would prove to be inadequately dispersed in the event of war.

The evils of centralized planning

THE Russian industrial system suffers also from concentration of another kind. The Russian aircraft industry has been we dispersed throughout the country, but the individual airfrat factory usually performs in one spot all the operations which, the case of a U.S. firm, would be subcontracted to a great number major and minor manufacturers located elsewhere. Thus an effective raid on a Russian aircraft production center would do medamage and keep plane production down longer than a raid on similar U.S. plant.

Our free enterprise system, in other words, seeking efficient through decentralization, has innocently achieved a far more effective dispersal of industrial machinery throughout the nation that the plan-bound Russian state machinery. How far decentralization has progressed in the U.S. may be judged from the fact that more than 50,000 companies were listed as essential war industries in the WPB Controlled Materials Plan.

So in the first trading of blows we would theoretically have better chance to deliver the more devastating, if not the more blow. This initial advantage should be of great help in carrying to final victory.

On the whole, therefore, our prospects of surviving a war Phase II as a free nation are good—if we adhere scrupulously



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search continue to be made available.

With the development of supersonic bombers with a global range, our dependence on outer bases would largely disappear; simultaneously the strain upon our diplomacy would lessen. Since war could then be waged against any part of the world from our own hemisphere, overseas logistics problems would evaporate, and our military interests in the outer world might be confined to raw materials.

Fascinated by the vistas of sheer mechanical efficiency opened up by intercontinental war, some thinkers argue that we can ignore the defense measures necessary for Phase I and Phase II and concentrate our inventive and technical resources upon the development of global bombers, guided missiles of transoceanic range and other Wellsian, Phase III paraphernalia. But this is a dangerous argument. A potential enemy might find Phase II, or even Phase I, more to his liking as a time to strike at us suddenly—and if he catches us off balance then, no blueprint of the weapons of a world yet to come could save us from disaster.

The Germans and the Japanese are the only peoples in the world who have had the full meaning of airpower brought home to them. In the last war they learned what it meant to lose control over their own air spaces. Most of the men in charge of Allied policy only dimly perceived what was happening. Yet from the middle of the war the ever-increasing destructiveness of airpower, which at Hiroshima burst upon the world with apocalyptic suddenness, was visible for those with eyes to see.

A multiplier of destruction

ORE than 40,000 people were killed in the British attacks upon Hamburg in July and August, 1943. In the great March 1945 attack on Tokyo 125,000 people perished and 75,000 more were rendered homeless in a single night by some 3,000 men in only 279 airplanes. Three attacks within 15 hours wiped out Dresden and buried perhaps 60,000 in its ruins. These terrifying magnitudes of destruction were brought about by airpower with only the conventional high explosive bomb.

The destructive power of the present atomic bomb, measured by military standards, has been exaggerated by laymen. Yet the fact remains that it injects a multiplier of destruction into the effectiveness of each bomber on the order of hundreds to one. Wars that might otherwise last years may be ended in weeks, perhaps days. And campaigns that would otherwise cost the lives of hundreds of thousands of soldiers and sailors may now be the work of a few hours by a few men. Much that would have been impossible becomes possible with the atomic bomb.

What potential aggressor, with the world to win, would pass up such a weapon? The only realistic answer, I think, is that the bomb would be used.

Where, then, do we stand?

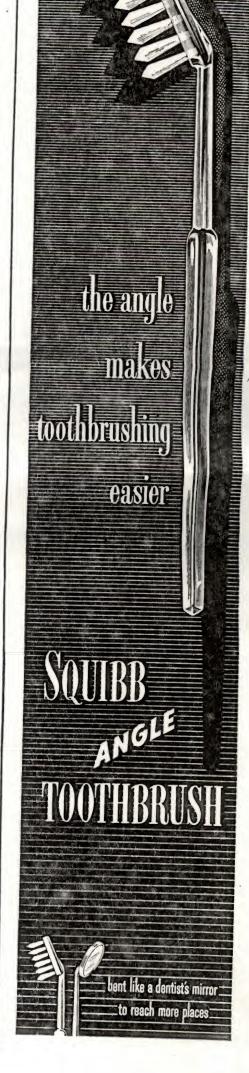
In Phase I—from now until approximately the end of 1952—we have nothing to fear except the possibility of a war which, given resolution and faith, we would win. Lacking an adequate strategic air force, the Russians could not hurt us fatally, while we could carry the war to any part of their country, though not without difficulty and at great cost.

In Phase II, when the Russians have the atomic bomb and even a moderately efficient long-range air force, they would certainly be in a position to hit us hard, if so disposed. But if we can count upon a system of outer bases our airpower would be decisive in the end result

Phase III? Here we reach the period of imponderables, a period in which military defense measures may become meaningless. To understand why this is so we need to look back at the road we have traveled.

During World War I each side inflicted appalling human slaughter on the other. The world nevertheless recovered, with a speed that now seems incredible. But World War II has left the Germans wandering numb and despairing among the rusting wreckage of what was once Europe's greatest industrial system.

The difference lies in the increased destructiveness of wars



ation of both sides, "victor" and "defeated" alike.

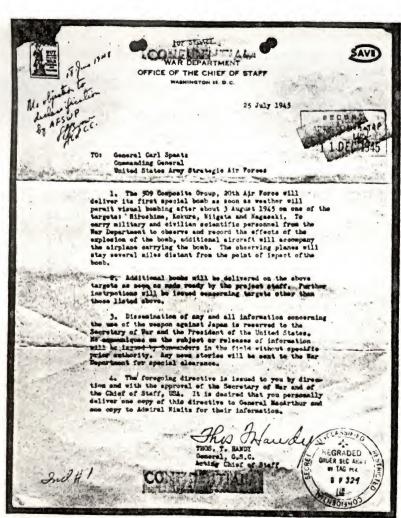
To the present postwar crisis we Americans, with our unmatched airpower and our policy of unconditional surrender, have been heavy, if unwitting, contributors. In Germany we ruined an industrial and commercial complex that must be rebuilt if Europe is ever to stand on its own feet again. In Japan we persisted in carrying the war to the home cities of an already beaten enemy. Yet powerful groups in both countries had long before the end recognized that their war was lost. Had we been able to solve this basic human problem, which lay in the realm of politics, the war might have been brought to a satisfactory end before both countries had been hammered to almost irretrievable ruin.

This human, political problem is still with us. We can look to military measures for our security in Phase I, and probably in Phase II. Assuming that we keep our present lead in technical skill and in industrial equipment, we may expect with some assurance that even a Phase III war would find us the "victor." But what sort of victory would it be, and what would be its rewards, if it

required the destruction of half the world?

Clemenceau once said that the conduct of war is too serious to be entrusted to generals. The airman at this stage might ask: Are wars not also too serious for politicians? Knowing the unlimited destructive power of a modern industrial state, we must think of our military might as a necessary but no more than temporary prop to our civilization.

When the statesmen of the world have perfected some political formula for replacing war between nations, we will no longer have to maintain the most powerful air force in the world. And unless the good society is able to produce such a political formula an atomic war may end in the most tragic of paradoxes: the good society, in attempting to destroy evil, may destroy itself.



TOP SECRET ORDER to drop atomic bombs, text of which is here published for the first time, lists four target cities; Kokura and Niigata were spared by Japanese surrender. The decision to issue order was made at the Allied conference then meeting at Potsdam. Handy, who signed order as Acting Chief of Staff in Marshall's absence, personally delivered it to Spaatz in Washington.

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